

CLAIMS

1. A method for hemming two aluminum sheet metal panels together
2 wherein one panel has a generally perpendicular flange with a width L from a bend
line on said one panel and to a free edge of said one panel, comprising the steps of:
4 positioning an outer edge of the other panel adjacent said bend line;
bending said flange so that said flange overlies the outer edge of said other
6 panel; and
thereafter compressing said flange against an outer peripheral portion of said
8 other panel so that said outer peripheral portion of said other panel is sandwiched in
between said flange and said one panel;
10 wherein said bending step further comprises the step of impacting a
curvilinear prehemming tool against an outer edge of said flange, said prehemming
12 tool has a curvilinear surface with a radius R_2 where R_2 is in the range of $2L > R_2 >$
 $1/3 L$ and wherein said curvilinear surface of said prehemming tool maintains contact
14 with the free edge of the flange throughout said bending step.

2. The invention as defined in claim 1 wherein said generally
2 perpendicular flange has an outer bending radius R in the range of $(1.0 \text{ mm} + t) > R >$
 $(0.2 \text{ mm} + t)$, where t = thickness of said one of said panels in millimeters.

3. The invention as defined in claim 1 wherein said curvilinear surface of
2 said prehemming tool, upon initial contact between said prehemming tool and the
outer edge of said flange, the angle between the plane of said flange and a tangent of
4 said prehemming tool is in the range of 55 to 70 degrees.

4. The invention as defined in claim 2 wherein said curvilinear surface of
2 said prehemming tool, upon initial contact between said prehemming tool and the
outer edge of said flange, the angle between the plane of said flange and a tangent of
4 said prehemming tool is in the range of 55 to 70 degrees.